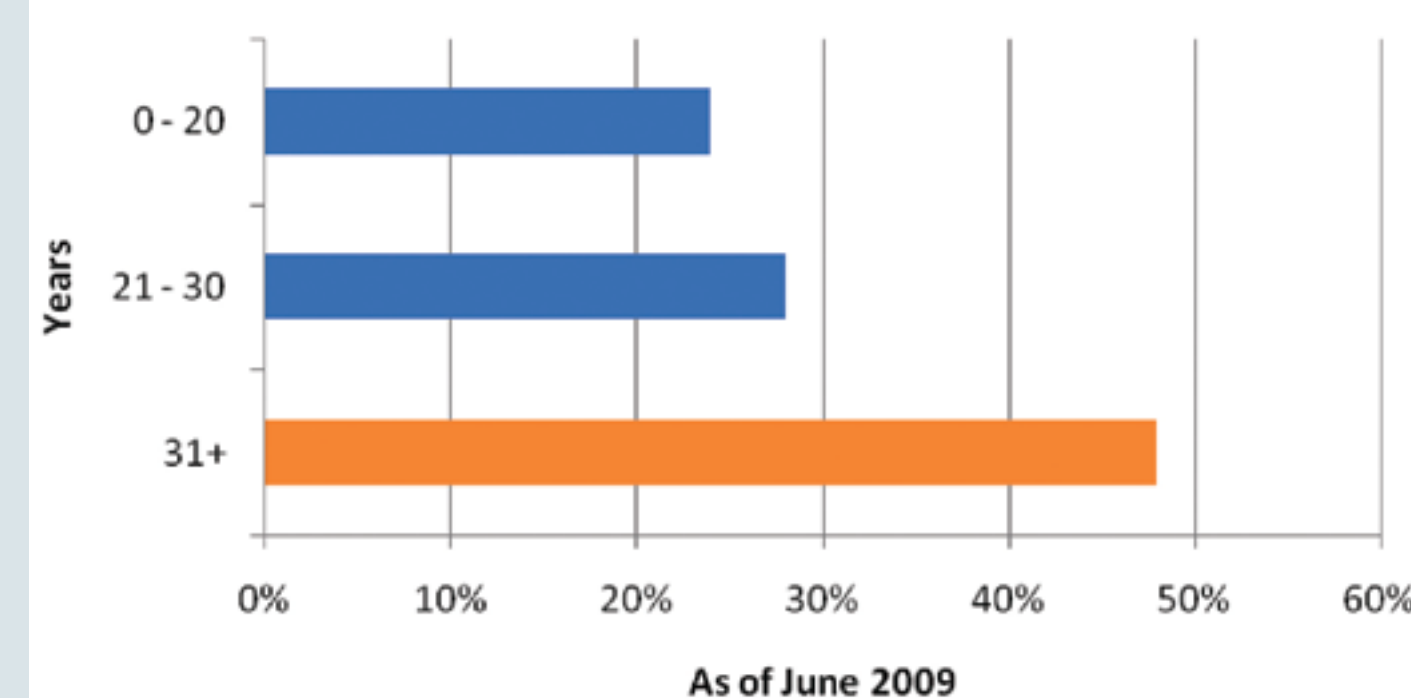


Rebuilding our aging Plant protects our health, Bay, and economy

The Plant was built in 1956 to clean the wastewater from food canneries and raw sewage from residents and businesses that was being dumped directly into the Bay. Major upgrades in the 1960s and 1970s, in response to water quality regulations, helped make the Plant's discharge even cleaner. Today, much of the infrastructure at the Plant is more than 30 years old, working well beyond its design life. The Plant Master Plan began after an asset study found \$1 billion in infrastructure needs just to rebuild the Plant the way it is now, without looking at future needs and new technologies.

Age of Plant Infrastructure



Needed Infrastructure Investments

Headworks

Expand headworks to equalize and accommodate peaks in flows; control odors; and route pipes more efficiently.

CURRENT

PROPOSED



headworks



expanded and covered headworks

Primary process

Rehabilitate tanks and control odors.



primary tanks



repaired and covered primary tanks

Secondary process

Rehabilitate tanks; install fine bubble diffusers to save energy; improve connections between tanks for operational flexibility; and prepare for additional nutrient removal required by regulations.



secondary tanks



secondary tanks with fine bubble diffusers

Filtration and disinfection

Install new filters and disinfection facilities to improve the quality of the Plant's effluent and recycled water.



filtration and disinfection



disk filters and ultraviolet disinfection

Making Infrastructure Investment Decisions

How do we wisely rebuild the Plant and incorporate new treatment technologies? Our decision framework includes these considerations and decision triggers:

Considerations

- **Plant flows and population growth.** We analyzed 10 years of flow data and projected how population growth might affect the flow. While the South Bay is expected to add 500,000 people by 2040, greater water conservation is also expected, resulting in a more concentrated influent.
- **Energy and byproducts potential.** All treatment processes have been analyzed for ways to achieve greater energy efficiency and production. The potential for byproduct markets has likewise been evaluated.
- **Sea-level rise.** The impact of potential sea-level rise is a design consideration.

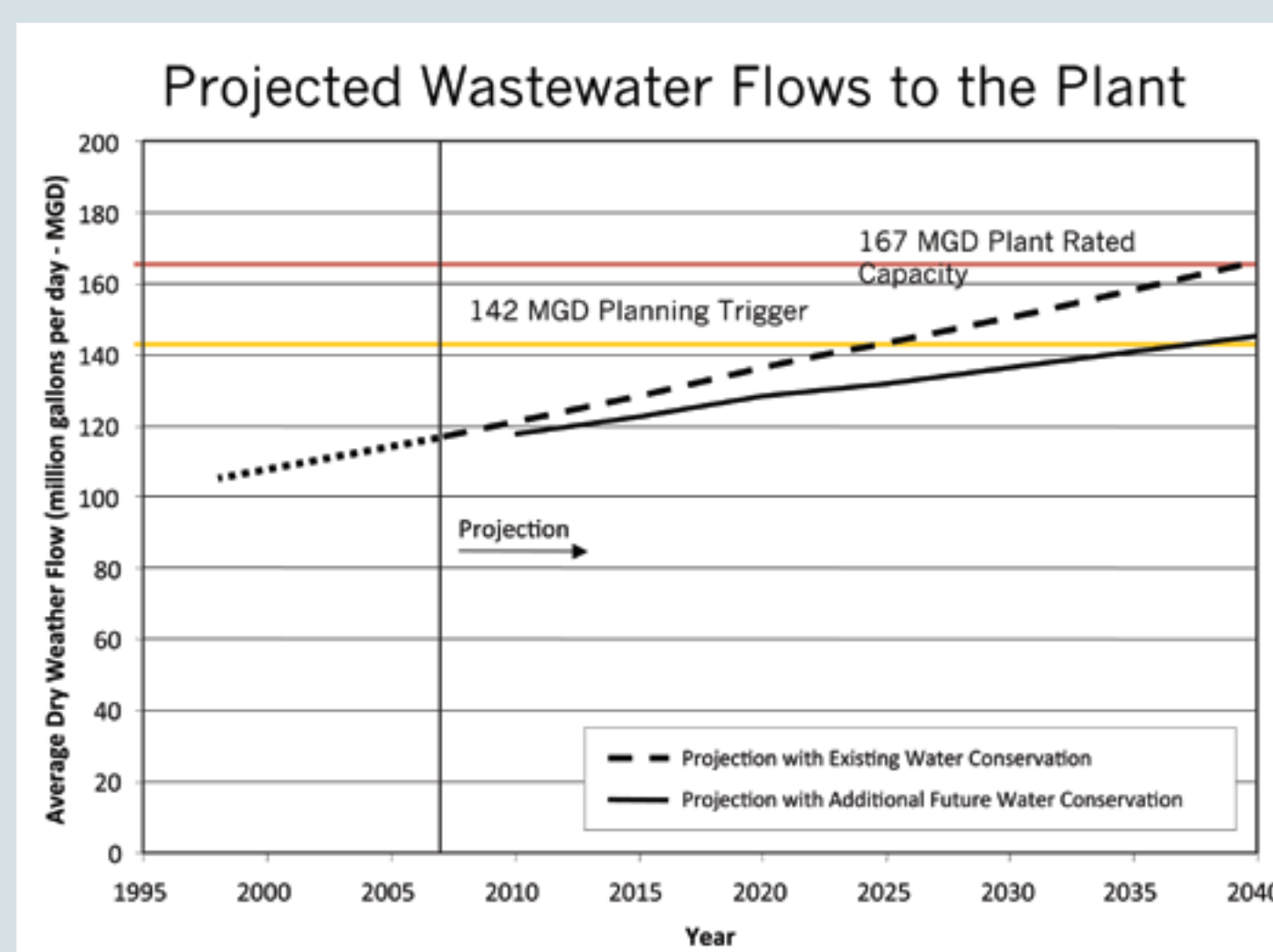
Triggers

- **Critical condition:** risk of failure of a vital facility or process requires repairs/rehabilitation.
- **Regulatory requirement:** future regulatory requirements require adjustments or new processes.
- **Economic benefit:** opportunities to save operating costs, including energy.
- **Improved performance benefit:** process improvements to increase reliability and reduce risks.
- **Policy decision:** improvements based on policy direction.

The infrastructure investments will help improve treated water quality

While wastewater flows will increase in the future (see chart below), four key improvements will both prevent spills and remove additional pollutants to keep the Bay safe:

- Improving nitrogen removal
- Adding discharge points and freshwater wetland
- Handling peak flows
- Addressing Contaminants of Emerging Concern



Improving Nitrogen Removal

Nitrogen is a natural part of our environment, but too much nitrogen (in the form of nitrates and ammonia) in a body of water may cause the marine habitat to degrade. Much of the nitrogen in the wastewater is already removed in the secondary treatment process. The Plant currently meets permit requirements for nitrogen removal. Denitrification filters are an effective technology in removing total nitrogen that can be added in the future if limits become more stringent.



Handling Peak Flows

Even though rainwater flows directly to the Bay through stormdrains without treatment, the inflow to the Plant increases significantly during storm events. The Plant has already invested in a wet weather reliability project that provides for storage of raw sewage when needed. The Plant Master Plan recommends improving this storage basin as well as expanding the headworks and adding additional storage to handle increased seasonal flows.



Adding Discharge Points and Freshwater Wetland

The Plant currently discharges to the Bay at one point – Artesian Slough. In the past, this discharge was thought to convert salt marsh to freshwater marsh and the Plant was therefore required to maintain summer discharge flows below 120 million gallons per day. To better distribute the Plant's constant supply of freshwater into the South Bay, three discharge points are proposed:

- 1) Restored Artesian Slough riparian area;
- 2) Freshwater wetlands discharging to Coyote Creek; and
- 3) Wet-weather overflow creek to help recreate the region's historic delta-like conditions.

Freshwater wetlands are an important habitat in the South Bay. Augmenting Coyote Creek and restoring a delta with a transition from salt to brackish to freshwater marsh is a significant opportunity in the Habitat Goals Project developed by scientists for the Bay Area.

Addressing Contaminants of Emerging Concern

Contaminants of Emerging Concern (CECs) are pollutants not currently regulated or included in routine monitoring but may be regulated in the future.

CECs include several types of chemicals:

- Persistent organic pollutants, such as polybrominated diphenyl ethers (PBDEs) which are used in flame retardants, furniture foam, plastics, etc.
- Pharmaceuticals and personal care products, including prescribed drugs, over-the-counter medications, bactericides, sunscreens, and synthetic musks.
- Endocrine-disrupting chemicals (EDCs), including estrogens and androgens, organochlorine pesticides and other chemicals that affect hormonal functions and steroidal synthesis in aquatic organisms.
- Nanomaterials, such as carbon nanotubes or a particulate titanium dioxide, of which little is known about either their environmental fate or effects.

Ultraviolet disinfection in combination with peroxide has been shown to neutralize CECs and is recommended to be implemented in the future.

The Plant turns wastewater into usable energy, water, and byproducts

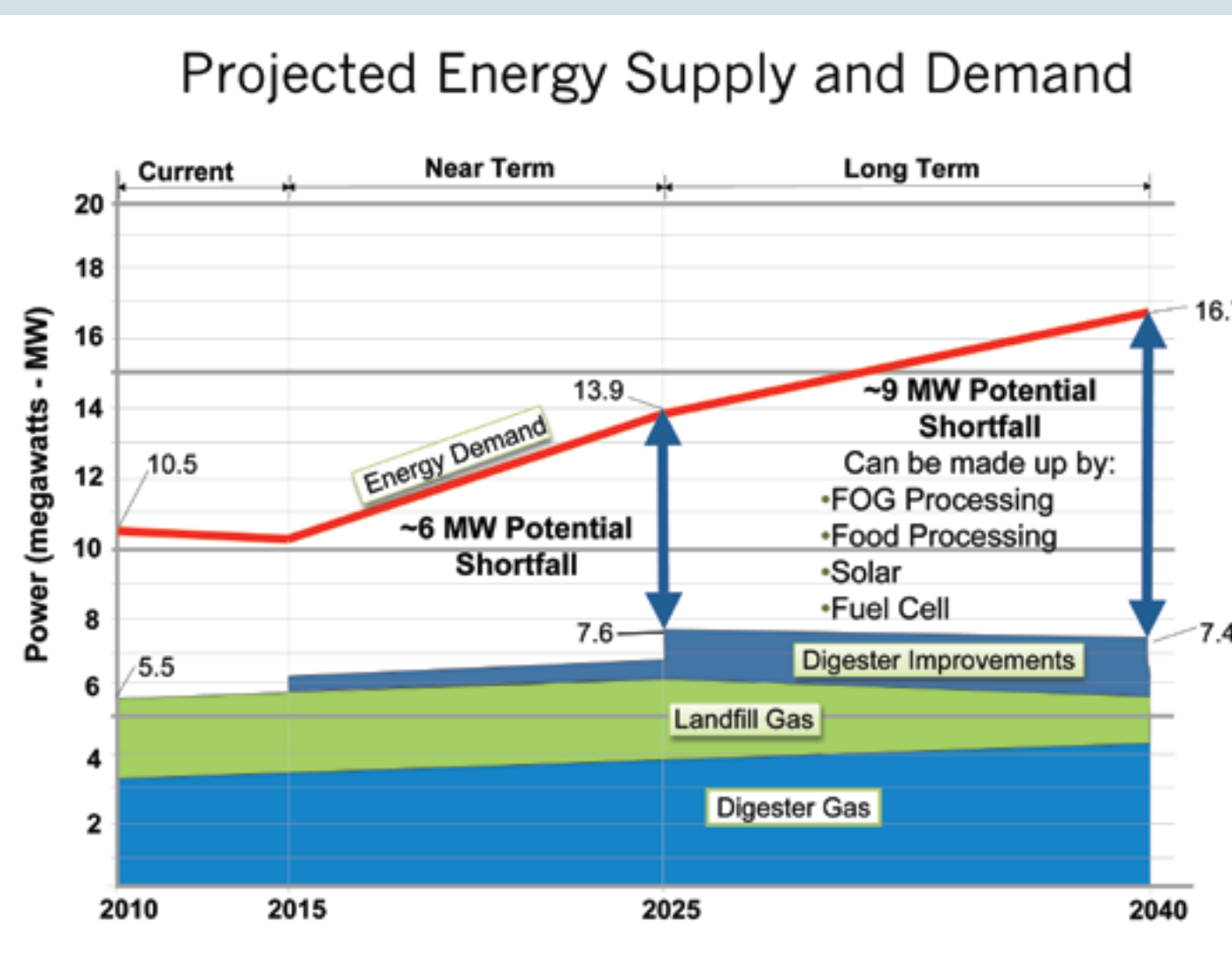
The Plant already produces biogas (methane) and can host other forms of alternative energy on its site, such as solar and/or fuel cell technologies.

The Plant also produces an average of 10 mgd of recycled water each day and plans to double that by 2020.

The Plant Master Plan project recommends that more be done to improve the Plant's performance at producing these resources.



Fuel cell



Biosolids

Every year, the Plant produces about 40,000 tons of Class A biosolids, the highest standard assigned to treated solids. The Plant already meets two-thirds of its energy needs with methane produced by digesting biosolids and from the adjacent landfill. Improving the treatment process will help the Plant reach its goal of energy self sufficiency.

Waste to Energy: The Plant's high-quality biosolids are currently only being used to cover trash at the nearby landfill. The Plant Master Plan looks to diversify the biosolids to three 50% options that include compost, land application, and energy generation.



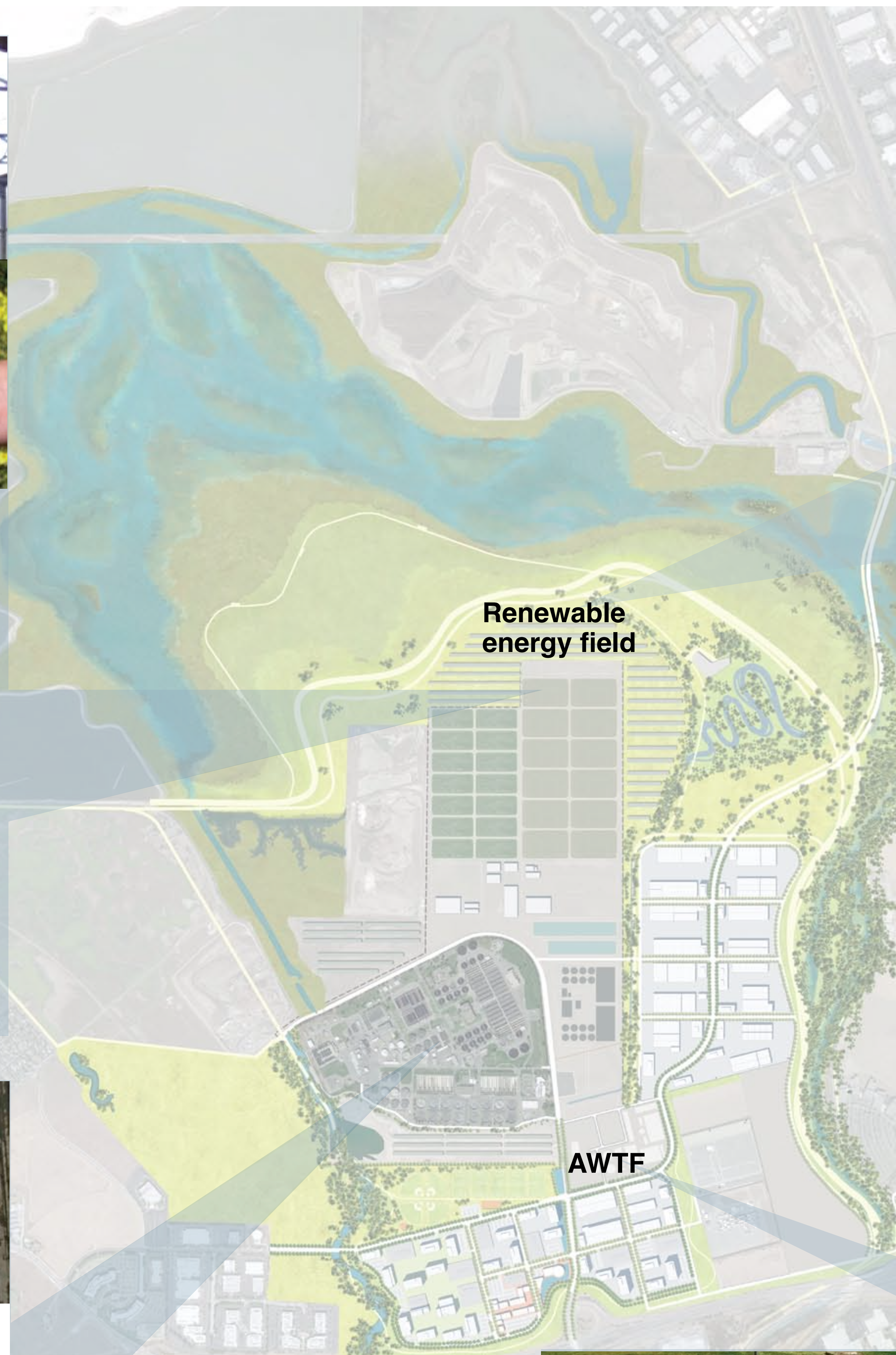
Energy - Methane

Improving the digesters' mixing technology will increase methane production. It is possible to enhance the methane production in the digesters by adding grease and food waste to the digesters. The Plant is already pursuing a pilot to accept fats, oil, and grease (FOG).



Energy - Solar

The Plant Master Plan reserves space for renewable energy generation such as solar fields and solar installations on the rooftops of the developed areas.



Recycled Water

The Plant currently recycles 10 percent of its effluent flow for use by industrial and landscaping customers in San José, Santa Clara, and Milpitas as part of the South Bay Water Recycling program. In partnership with the Santa Clara Valley Water District, an Advanced Water Treatment Facility (AWTF) is being constructed to further improve the quality of recycled water. The Plant Master Plan reserves land for expansion of this facility in the future.

Reducing odors helps to be a good neighbor and enable new land uses

The Plant has worked to reduce odors in the region by changing its operational practices and is also participating in a regional odor study with neighboring facilities. The Plant Master Plan proposes covering the open tanks as they are repaired or replaced, and treating the air from the treatment processes to further reduce odors.

By converting from lagoons and drying beds to mechanical drying and dewatering, the Plant can reduce the current biosolids processing area from 500 acres to 200 acres. This is one of the major projects over the next 15 years, and will result in reduced odors emitted from the Plant and enable other land uses.



Current open thickening tank



Future covered thickening tank

Steps to Reducing Odors

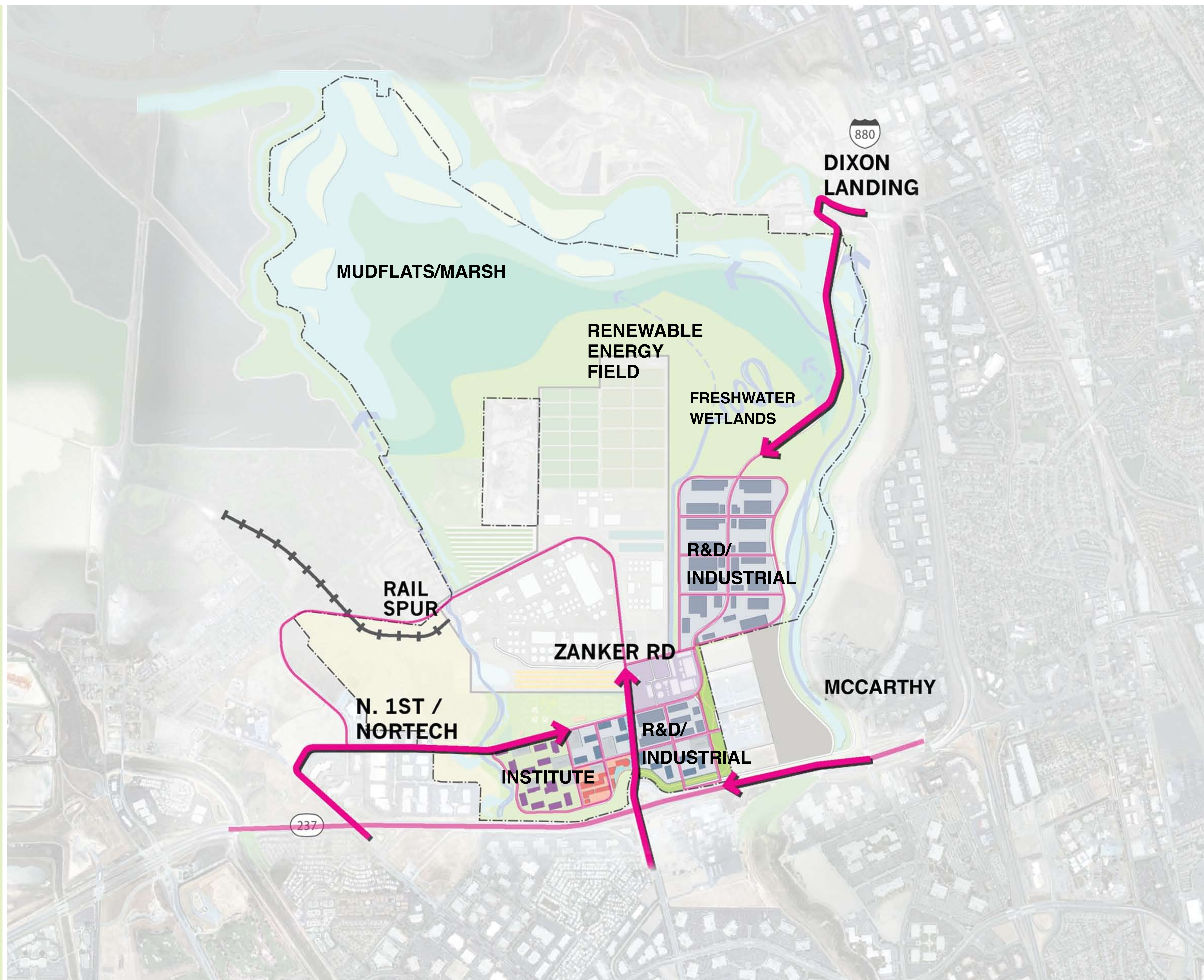
The largest investment needed is to change the current biosolids dewatering and drying process. Instead of using 500 acres of open-air lagoons and drying beds, the Plant Master Plan proposes a new mechanical process that will minimize odors, address future greenhouse gas regulations, diversify disposal and reuse options, and enable new land uses.

Enhanced road and rail network

The Plant Master Plan proposes connecting Nortech Drive to Zanker Road. This proposed road will then be extended north to Dixon Landing Road. A planned traffic impact study, as part of the environmental review process, will refine current information to help ensure any future road connections are safe, improve circulation patterns, and provide access to the new site features.



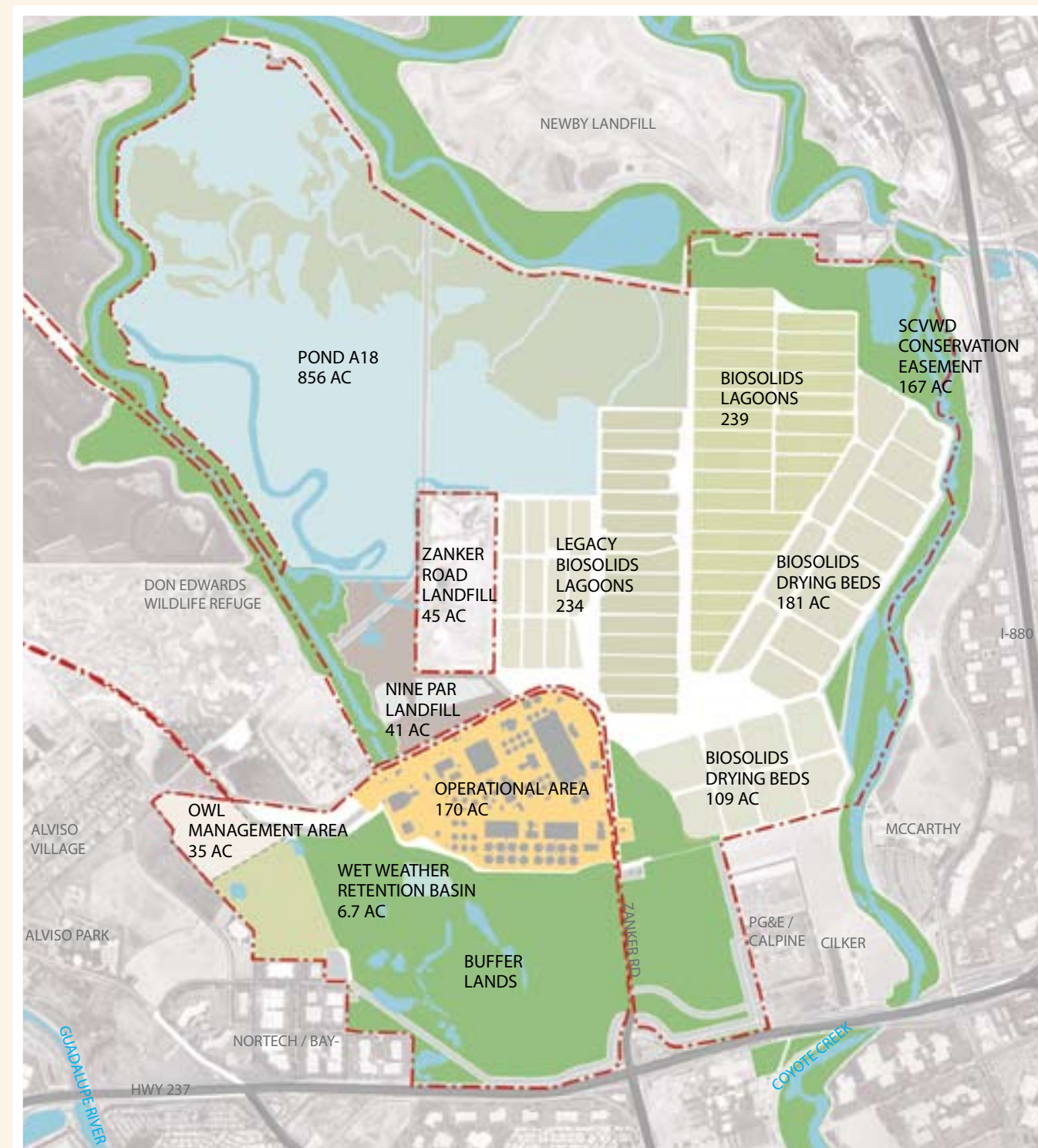
current land use



The 2,600-acre shoreline site can be a destination for the region to enjoy

The Plant site is more than twice the size of San Francisco's Golden Gate Park and offers great potential recreational opportunities for the region.

Funding for such recreational improvements cannot be provided by the Plant, as sewer fees can only be used for the sewer system. A collaboration between public, corporate, developer, and philanthropic entities could possibly result in funding for recreational uses.



current land use



Education

Since 2008, more than 9,000 visitors have toured the Plant and learned how wastewater is treated to protect our health, Bay, and economy, and used to provide a drought-proof water supply.

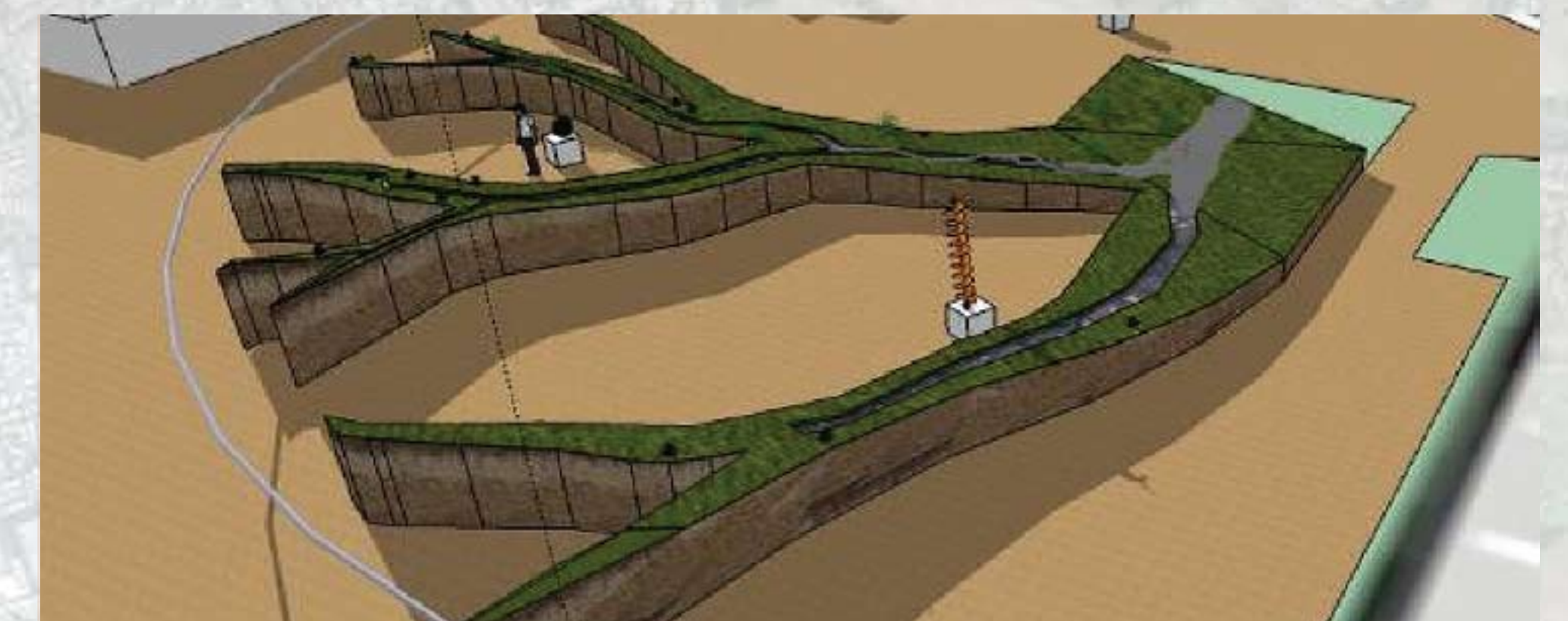
The Plant Master Plan creates opportunities to locate nature and education centers that complement the existing Don Edwards National Wildlife Refuge Education Center.

The Nature Museum could provide space for nonprofits to operate close to the Bay habitats to protect wildlife and provide educational opportunities for all ages.



Trails

The Plant Master Plan proposes a total of 16 miles of new trails and connects the Bay Trail, providing a way to bike and walk between the Coyote Creek and Guadalupe River.



Public Art

The Plant Master Plan presents a unique opportunity to integrate art at the site and provide educational opportunities linking the land uses to the exciting technical features of the Plant itself. There are several art projects underway and planned to use the 1% of capital investment set aside by San José's public art ordinance.



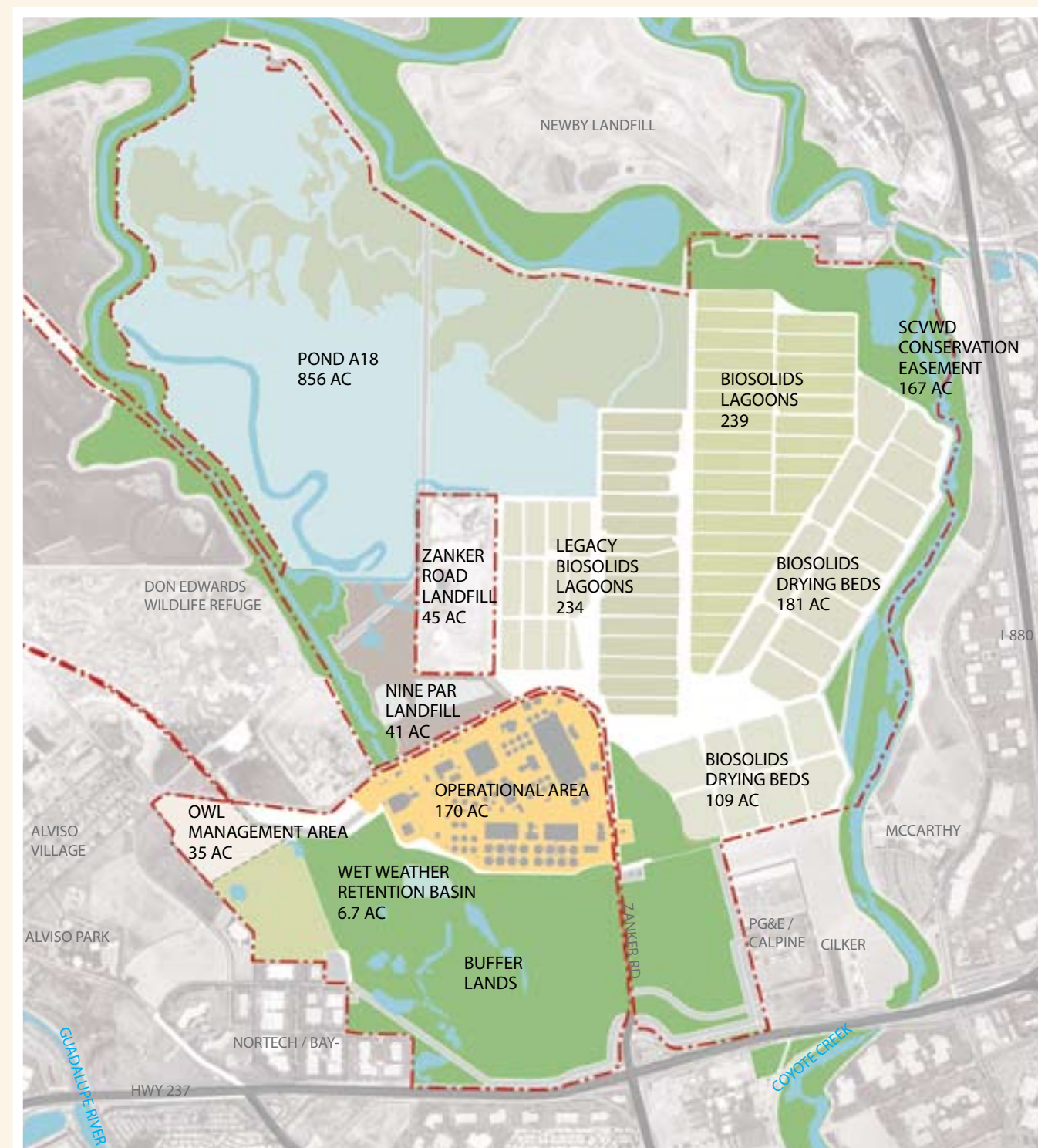
Parks

The Plant Master Plan envisions a:

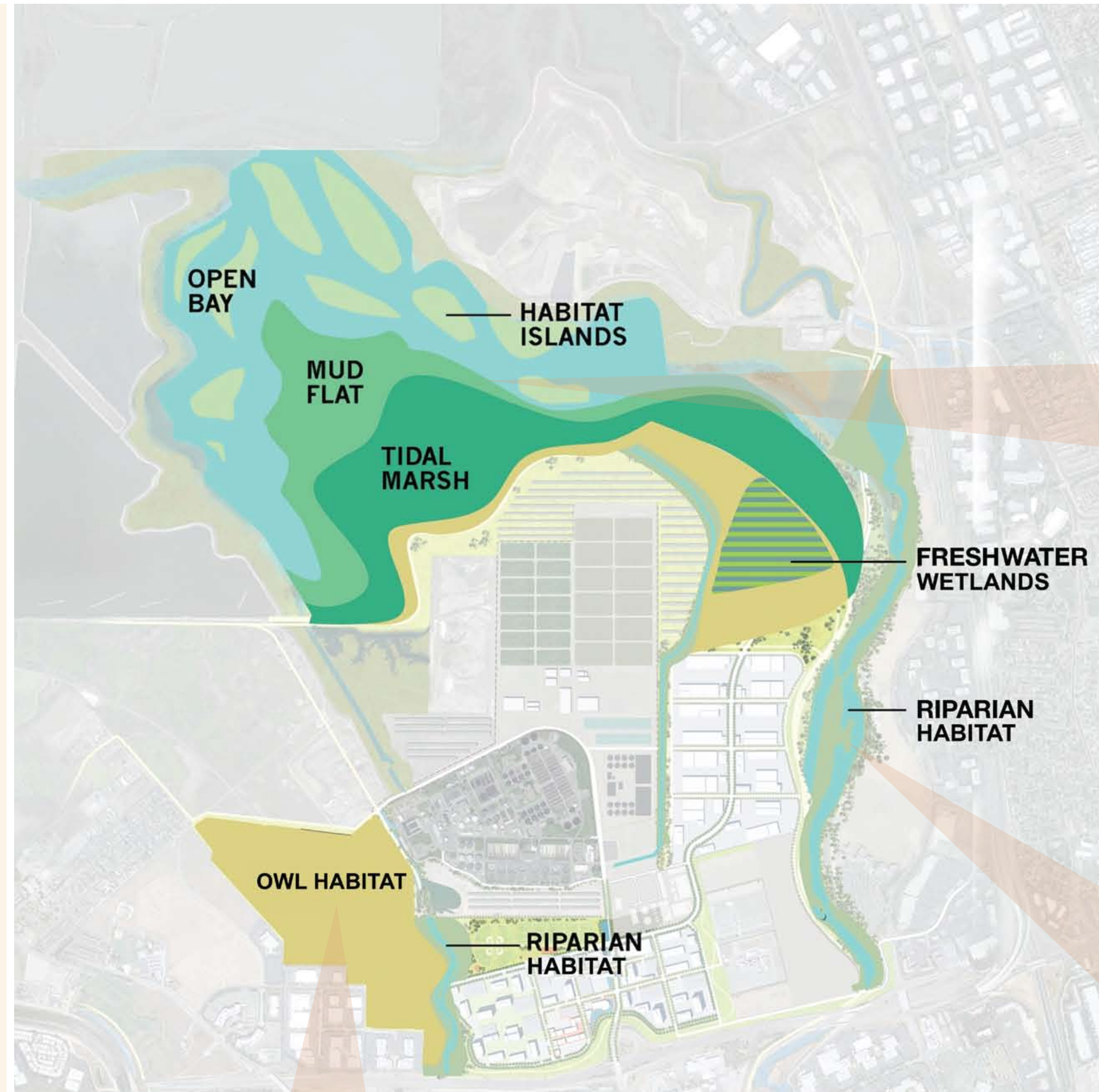
- 40-acre park with sports fields and connection to restored Artesian Slough, as well as access to retail areas.
- 50-acres of flexible open space with connection to habitat areas.
- Access to the Plant's freshwater wetlands for bird watching and hiking (60 acres).

The Plant Master Plan allocates land for environmental protection and restoration, including:

- 190 acres of burrowing owl habitat and additional uplands.
- More than 900 acres of salt marsh habitat and tidal areas, which also benefit flood protection.
- Expanded Coyote Creek delta and connection to the Bay.
- Restored Artesian Slough and additional riparian areas (225 acres).
- Freshwater wetlands to protect the salt marsh (60 acres).



current land use



Mudflats/Marsh

The plan is consistent with the Habitat Goals Project, which identified this site as having unique opportunities to restore a transition from the Bay salt marsh habitat, through brackish and freshwater wetlands to uplands. The Plant lands are part of the Pacific flyway and home to thousands of migratory birds each year.



Riparian habitat

The expanded Coyote Creek corridor and restored Artesian Slough will provide vital habitat.



Owl habitat

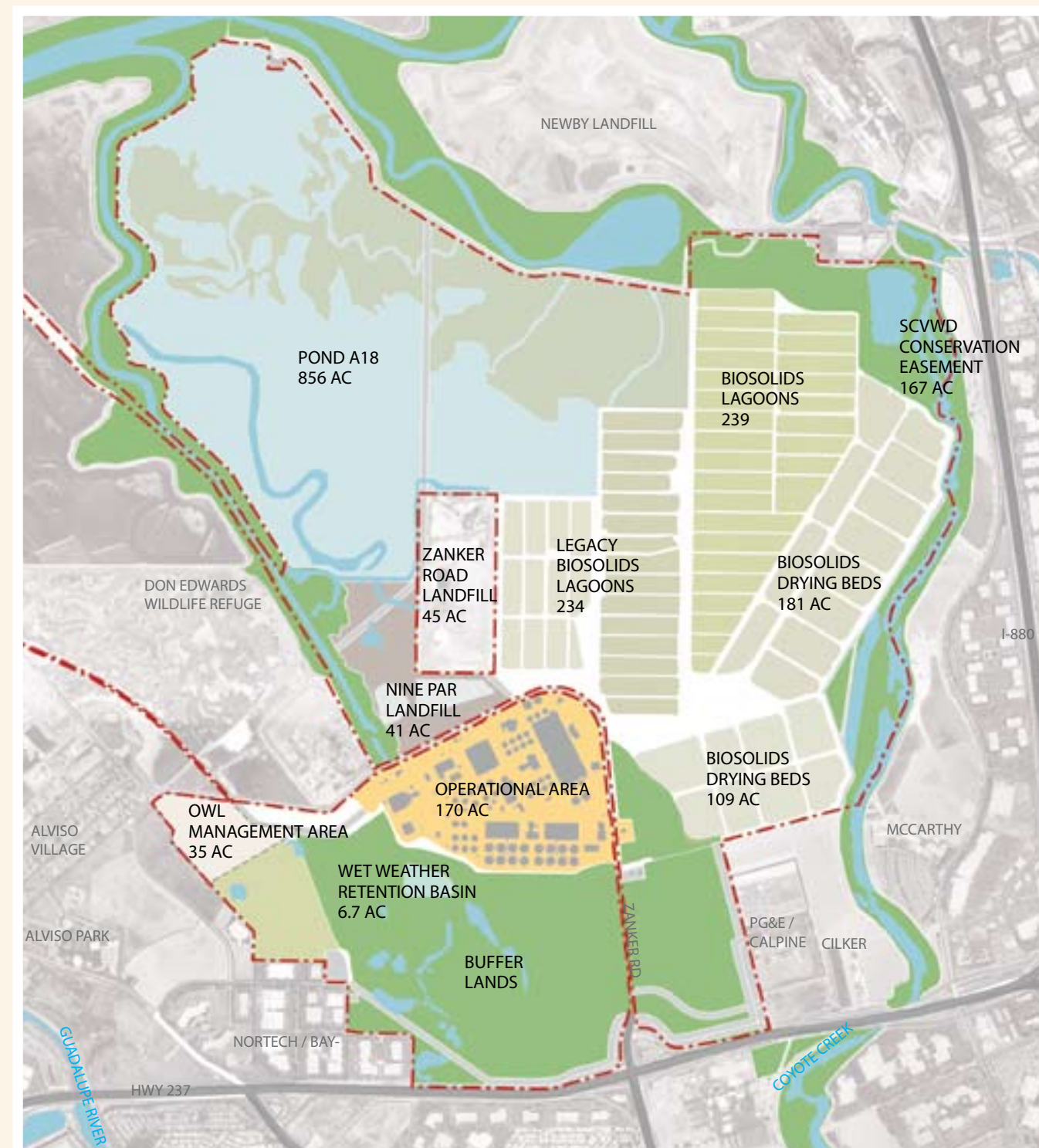
The grasslands have been identified as providing a home for the Western Burrowing Owl, a California species of special concern.

An opportunity to respond to market demand

The draft recommended alternative allocates 300 acres for retail, office, and light industrial development, as well as an institute, to create jobs and generate revenue for the region.

The timing of the development will be determined by:

- 1) Infrastructure improvements to reduce odors and make lands available in the current biosolids area
- 2) Market demand



current land use



Institute

The Plant Master Plan also includes 45 acres along Highway 237 to allow for a clean tech and water institute that could be an incubator and demonstration facility for water-related technologies. This presents a significant opportunity to develop a public-private partnership.



Clean Tech Manufacturing

The Plant Master Plan envisions 220-235 acres of office and light industrial development with a focus on clean tech both along the frontage of Highway 237 and in the current biosolids drying area. This space is critical to support the growth of this important industry and to provide clean tech jobs for the region.



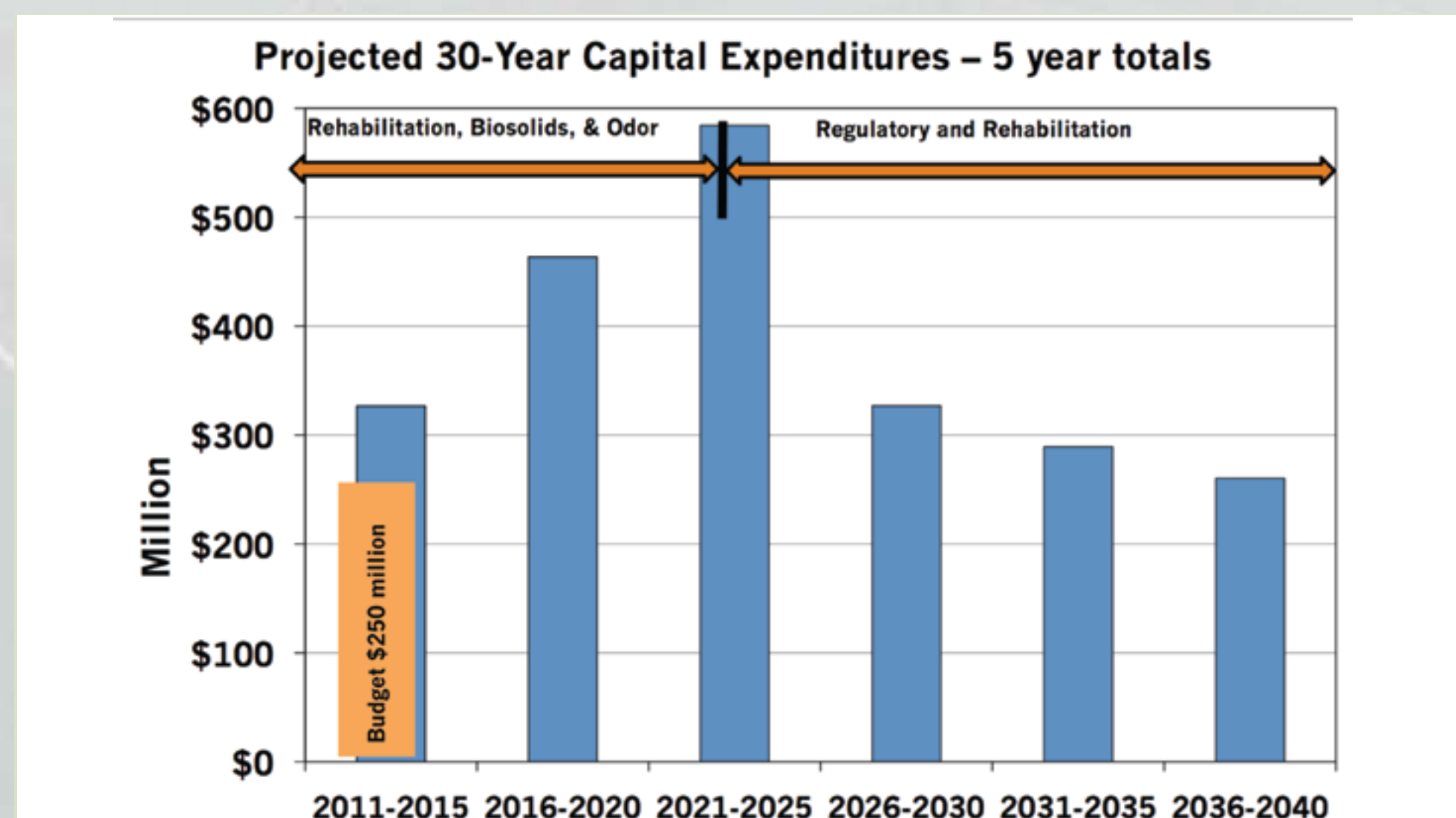
Plant Pilot Program – Test New Technologies

Pilot programs help grow new technologies in Silicon Valley and the wastewater industry while helping the Plant make sure the technology is appropriate before a full-scale investment. Proposed pilot projects include:

- Filters
- Co-thickening
- Pre-processing
- Digesters
- Dewatering
- Heat drying
- Greenhouse drying

Current needs, future returns

The plan creates substantial positive regional economic benefit. The \$2.2 billion investment in the Plant's infrastructure will take place over 30 years. The improvements are timed based on the functional and regulatory needs to treat wastewater. These capital needs will require an immediate increase in revenue. Over time, these future capital, operations, and maintenance costs may be reduced by the revenue generated by land use development.



Revenue Requirements

The anticipated capital improvement program (CIP) dollars needed over the next 15 years will require an increase from an annual average of \$50 million per year to \$80 million per year.

Funding Opportunities

Sewer rates can only fund Plant related improvements. Land use elements, including development areas, roads, parks, trails, and restoration will need to be funded using other sources such as public/private partnerships and grants.

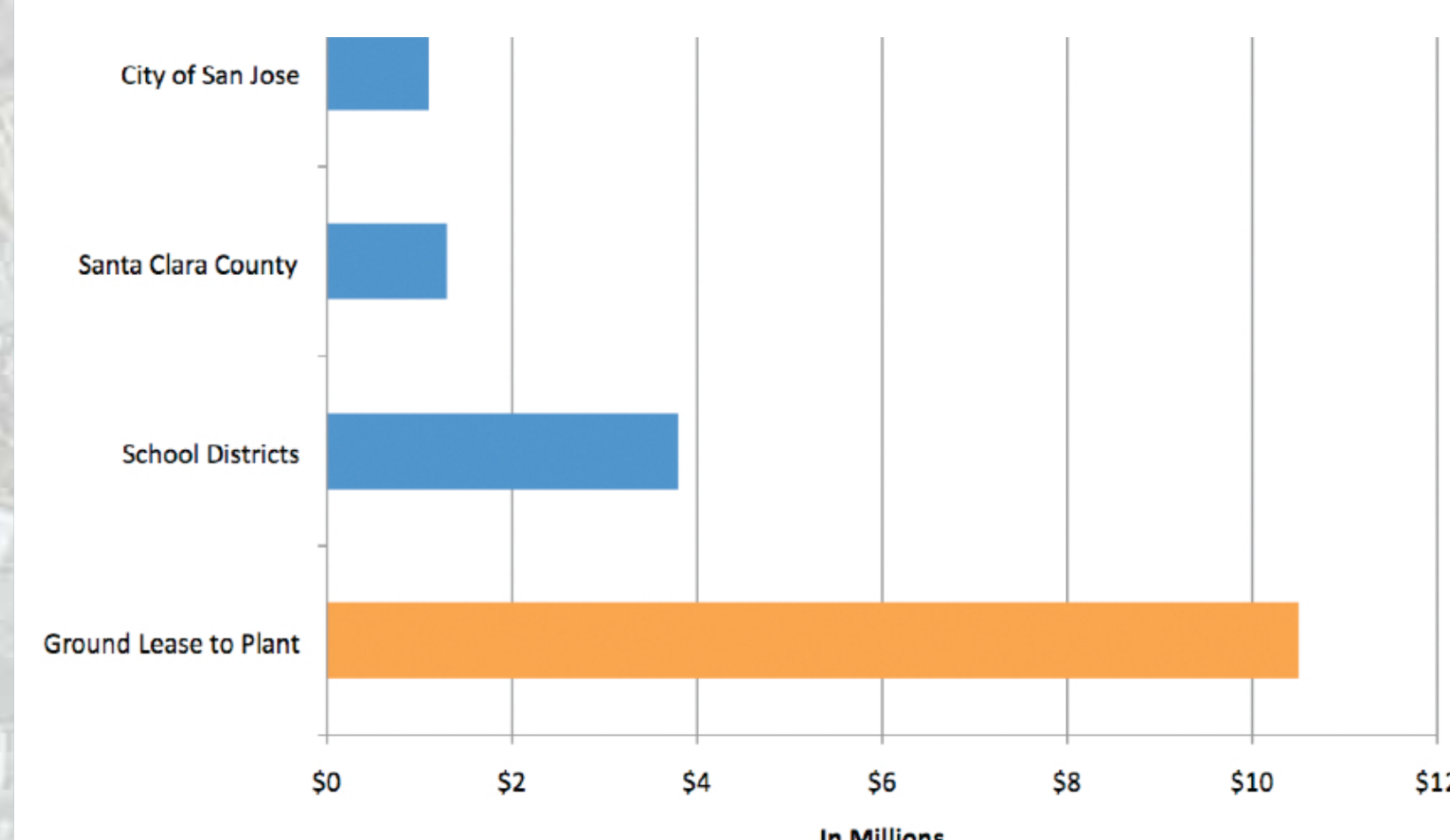


Land Use Benefits

At build-out, the positive fiscal impact is projected to be \$1.1 million based on property and sales tax revenue, with substantial additional benefit to Santa Clara County and local school districts. The annual projected ground lease revenue at build-out is projected to be \$10.5 million. The direct jobs created by this plan are projected at 15,200 with additional indirect jobs as well as about 2,000 construction jobs. Consequently, the plan creates positive regional economic benefit for the City and its partners.

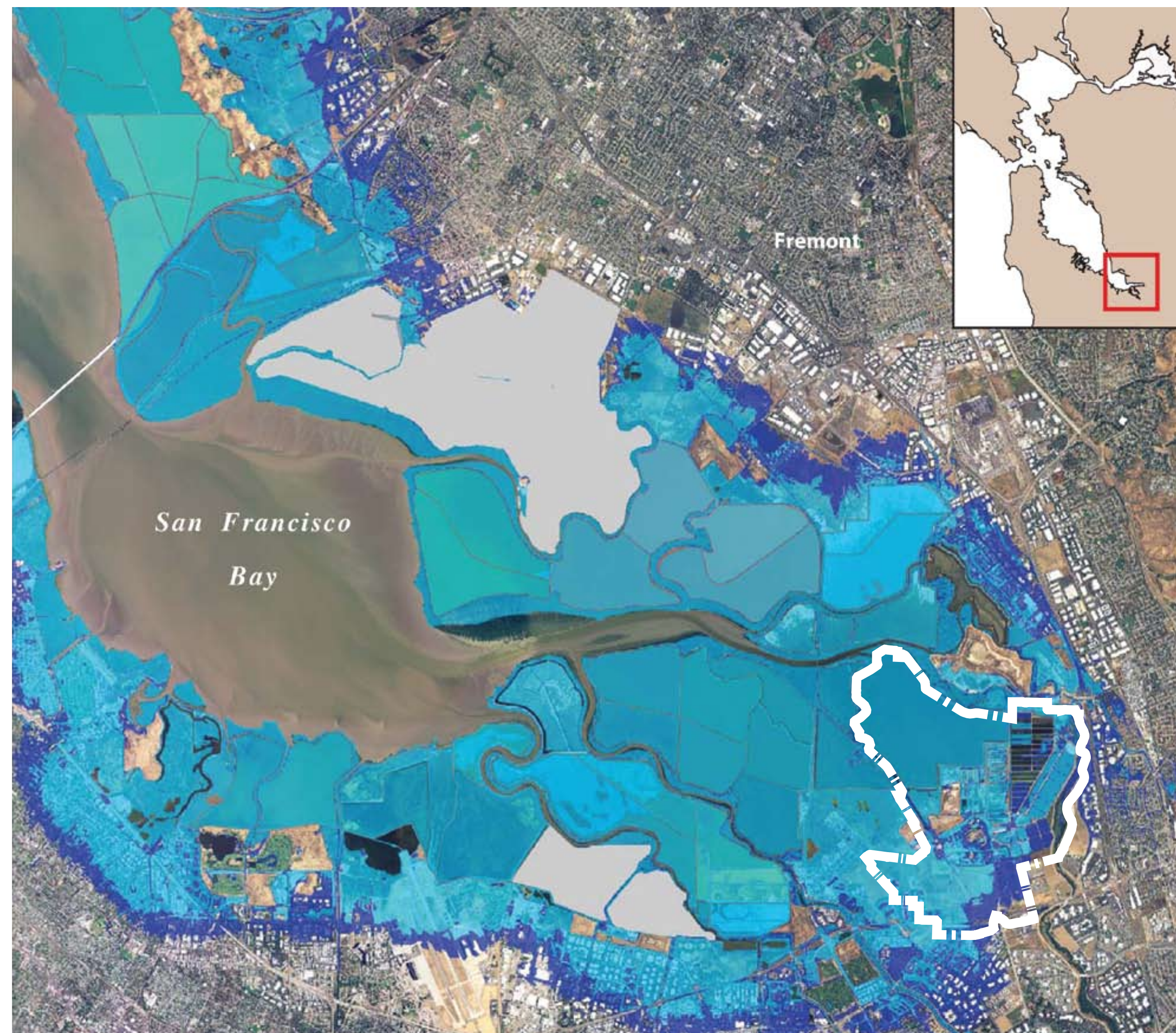
The Plant Master Plan ensures consistency with the City of San José's Envision 2040 process and Green Vision to provide jobs and opportunities for clean tech development.

Projected Annual Revenue at Buildout 2040



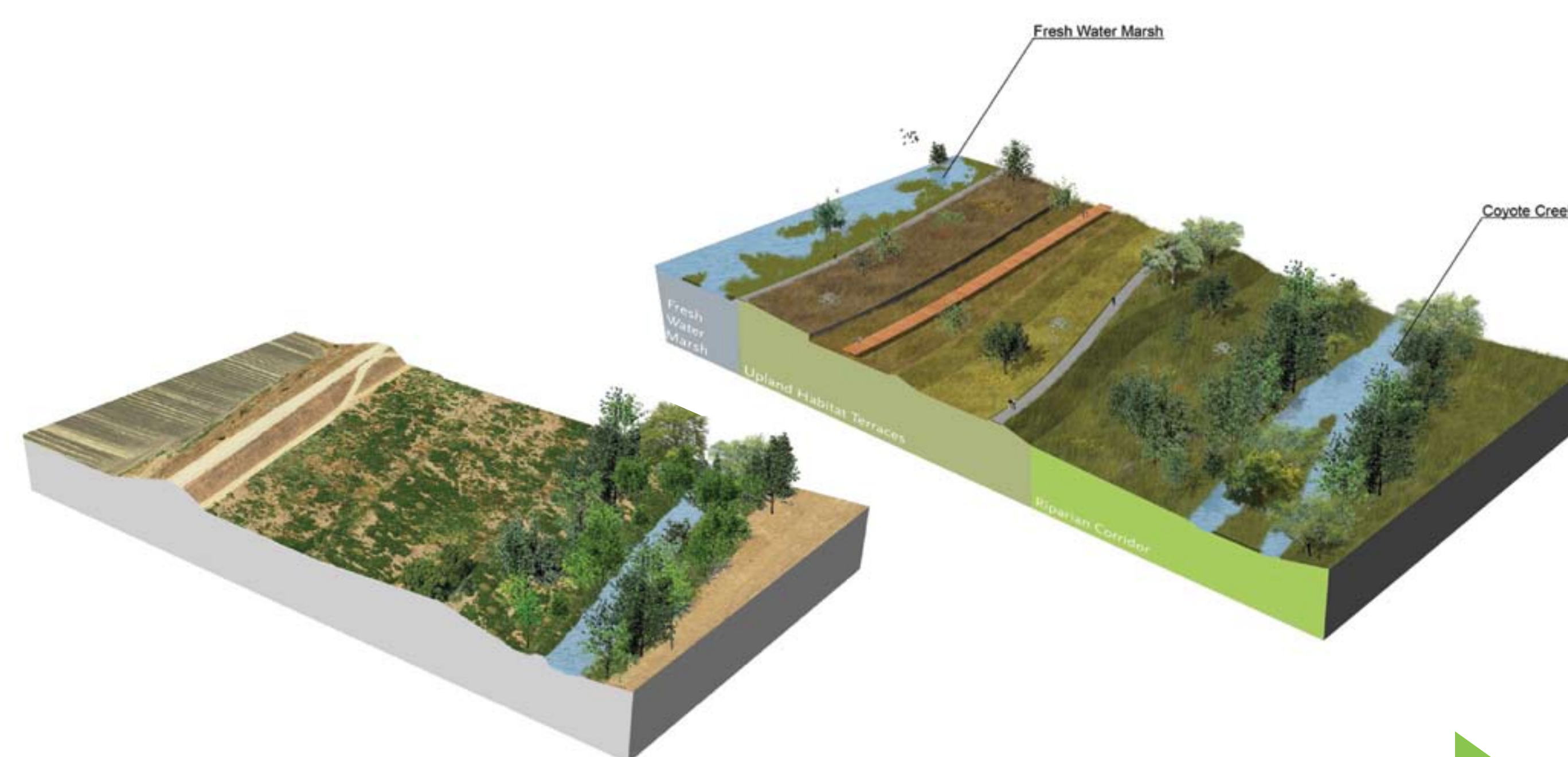
Natural and engineered landscapes to protect the Plant and its surroundings

One of the major land use strategies part of the Plant Master Plan development was to determine the appropriate alignment for levees to protect this critical facility from future sea-level rise. City staff have been working with the Army Corps of Engineers and Santa Clara Valley Water District's South Bay Shoreline Study. The Plant Master Plan recommended alternative also meets the Plant's permit requirement to plan future uses for former saltpond A18, purchased by the Plant as additional buffer land in 2005.



Sea-level Rise

The Plant's location at the Bay's edge places it at risk in any sea-level rise scenario. The maps produced by the San Francisco Bay Conservation and Development Commission show that the bulk of the Plant's operational area as well as the buffer-lands are vulnerable.

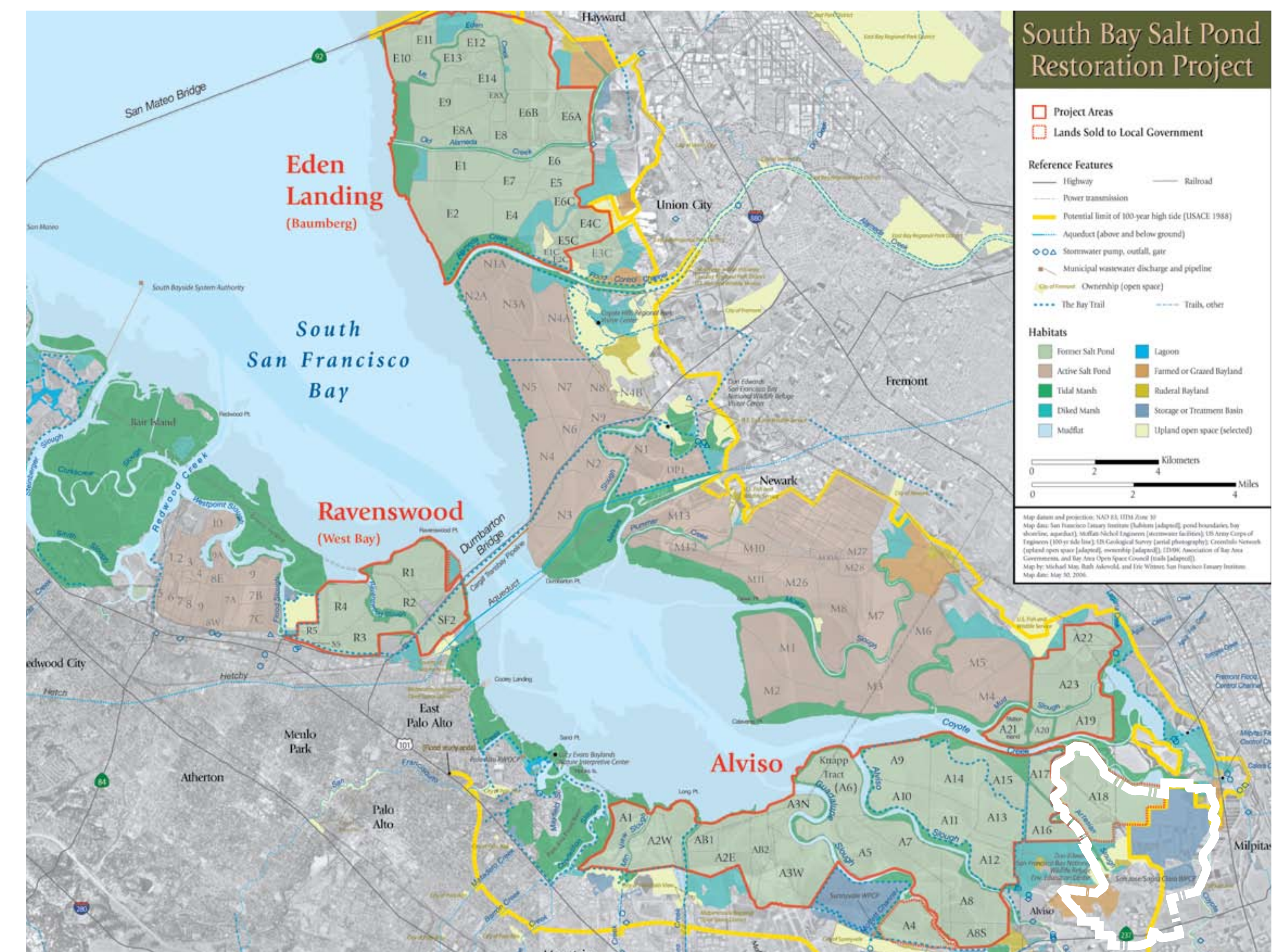


NOW

FUTURE

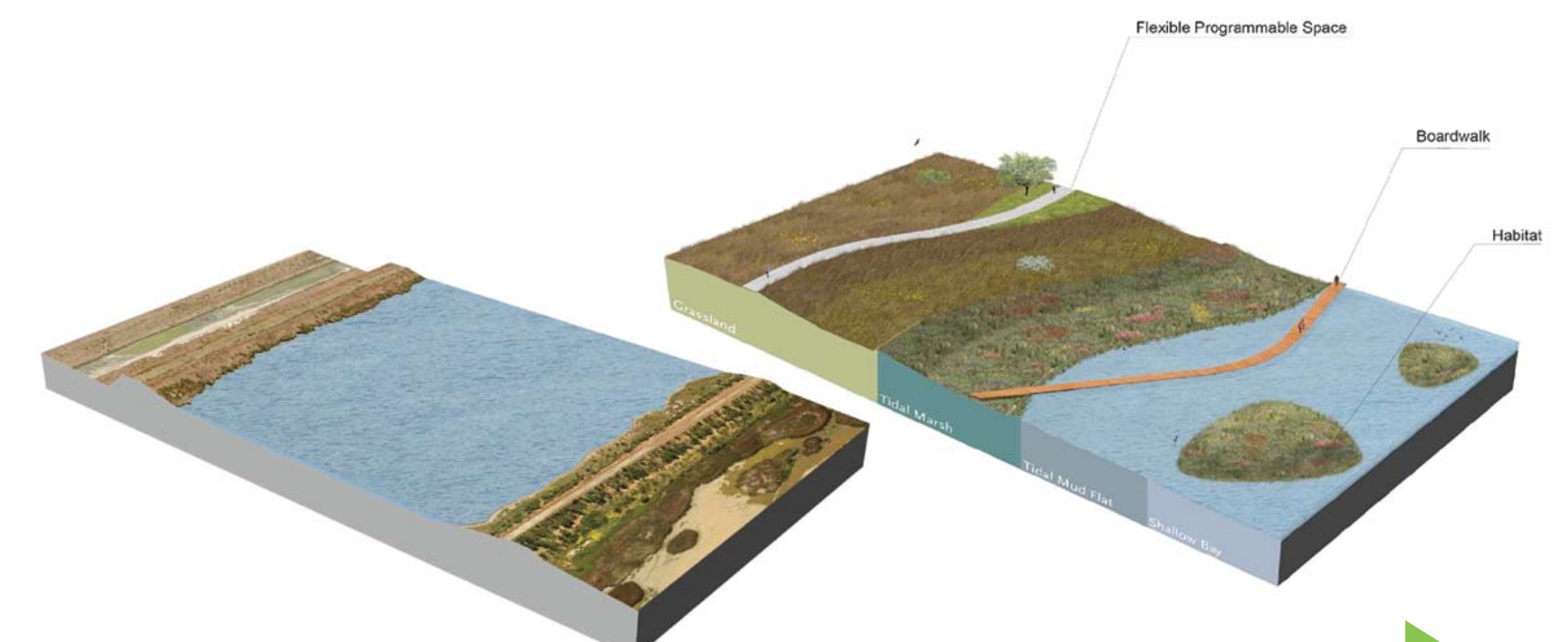
Widened Coyote Creek Channel and Levee

Widening the Coyote Creek channel will increase the areas for water to meander and restore the connection between the upland riparian areas to restored fresh water marsh, salt marsh, and the Bay. This will allow Coyote Creek to handle potential increases in future floodwaters and provide vital habitats lost over time.



Salt Pond Restoration

Planning for Pond A18 and long-term flood protection for the Plant from sea-level rise has involved coordination with the South Bay Salt Pond Restoration Project (U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the California State Coastal Conservancy) and the Shoreline Study partners (U.S. Army Corps of Engineers, California State Coastal Conservancy, and the Santa Clara Valley Water District).



NOW

FUTURE

Pond A18 Terraced Levee

Pond A18's proposed terraced levee, where the salt marsh will "step-up" from the Bay to an inboard levee, will allow for the maximum flexibility to address the uncertainties of future sea-level rise protecting the Plant and Plant lands while restoring historic Bay habitats.

The Plant Master Plan is built on the concept of sustainability with the primary goal being continued reliable operation of the Plant.

The planning process has sought input from experts, regulators, stakeholders, and the public at large.



Community Advisory Group. Twenty members, who are residents or business owners from across the Plant's service area, provide a consistent community perspective on key Plant issues and land uses.

Technical Advisory Group. A panel of renowned wastewater experts has provided feedback on the Plant Master Plan.

Regulators. Project staff have sought input from regulators who oversee the Plant's operations and lands.

Public input. Input from public workshops and the website has been used to progressively refine the proposal for a recommended land use alternative.

Plant tours. Public tours of the Plant have been offered since 2008 to enable residents to learn more about the Plant and the Plant Master Plan. More than 9,000 people have toured the Plant.

Distilling Concepts and Input into a 30-Year Plan

Four Early Concepts



Perimeter



Delta



Fingers



Islands

Three Land Uses Alternatives



Riparian Corridor

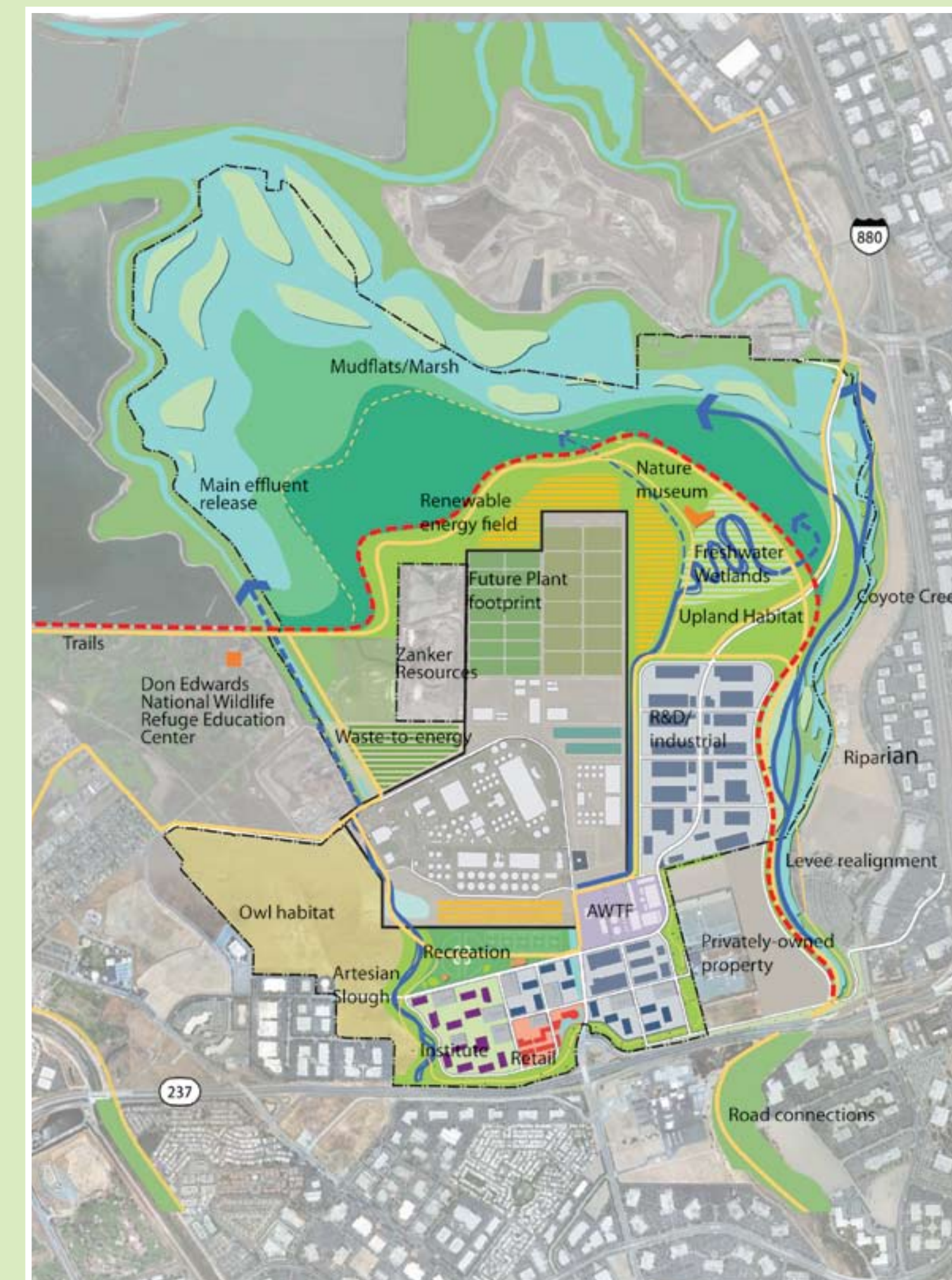


Necklace of lakes



Back to the Bay

One Recommended Alternative



Final
Recommended
Alternative and
EIR Process.

Implement

2009

May 2010

Jan 2011

Apr 2011-2012

2013-2040

Main Features

- Development area is located along Highway 237
- Shoreline levee is placed closest to the Plant operations with salt marsh and mudflats on the Bay side to provide flood protection
- Park with sports fields and connection to Artesian Slough and retail areas
- An institute is visible from Highway 237 and connected to recreation, habitat and retail areas

Economic Benefit

- Lease revenue could be used to defray Plant operational costs (subject to city council approval)
- Estimated jobs potential: 17,800

Phasing

- The alternative is contingent upon implementing odor control measures and relocating the biosolids processing area
- An odor study will identify which lands can be developed with current odor controls, which lands are suitable for uses that are not odor-sensitive (e.g., solar fields), and which lands require additional odor controls prior to development

Funding

- Sanitary sewer rate fees only support Plant projects and will not be used to fund other uses
- Costs for the operational improvements have been identified and the Plant's co-owners and tributary agencies are evaluating financing options

